Supplemental Information for “A comparison of GC-FID and PTR-MS toluene measurements in ambient air under conditions of enhanced monoterpene loading”

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Table S1. Mixing ratio in pptv, per-carbon response factor (PCRF) and standard deviation (StdDev) of the PCRF for the Thompson Farm GC system whole air working standards (Std0 and DC2). For DC2, the pre-ICARTT and ICARTT PCRFs are listed to show the change in the monoterpene mixing ratios over the course of the campaign but the consistency of the *n*-decane PCRF.

		ICARTT			Pre-ICARTT		ICARTT	
Compound	Std0 (pptv)	Std0 PCRF	Std0 StdDev	DC2 (pptv)	DC2 PCRF	DC2 StdDev	DC2 PCRF	DC2 StdDev
n-heptane	52	1.42	0.09	676	1.41	0.06	1.41	0.09
toluene	101	1.41	0.06	1215	1.42	0.04	1.41	0.06
n-octane	33	1.43	0.07	356	1.40	0.04	1.40	0.06
ethylbenzene	30	1.41	0.07	304	1.40	0.04	1.41	0.05
1,2,4-TMB[a]	54	1.40	0.08	285	1.42	0.04	1.41	0.06
n-decane	38	1.42	0.07	290	1.41	0.04	1.42	0.09
α-pinene	-	-	-	469	1.41	0.06	1.36	0.11
β-pinene	-	-	-	99	1.41	0.08	0.40	-

[a]1,2,4-trimethylbenzene.

Table S2. The per-carbon response factor (PCRF) and standard deviation (StdDev) of the PCRF for the Thompson Farm GC system whole air working standard (DC2) and for two of the Apel-Riemer Environmental, Inc. gravimetric standards used for PTR-MS calibrations (Monoterpenes and Aromatics) during the ICARTT campaign. These results further validated the use of a single response factor for each group of compounds, specifically C_7 and C_{10} NMHCs.

			Apel-Riemer Gravimetric Standards			
	DC2	DC2	Monoterpenes		Aromatics	
Compound	PCRF	StdDev	PCRF	StdDev	PCRF	StdDev
toluene	1.40	0.02	-	-	1.42	0.02
ethylbenzene	1.40	0.05	-	-	1.39	0.02
1,2,4-TMB[a]	1.42	0.02	-	-	1.41	0.02
n-decane	1.42	0.03	-	-	-	-
α-pinene	1.43	0.03	1.39	0.03	-	-
β-pinene	1.42	0.02	-	-	-	-
camphene	-	-	1.43	0.04	-	-

[a]1,2,4-trimethylbenzene.

Table S3. The 24 VOC-related masses monitored by PTR-MS during the ICARTT campaign.

m/*z*	Nominal assignment[a]
33	methanol
42	acetonitrile
45	acetaldehyde
47	ethanol
51	methyl chloride
59	acetone
61	acetic acid
63	dimethyl sulfide
69	isoprene
71	methyl vinyl ketone, methacrolein
73	methyl ethyl ketone
77	peroxy acetyl nitrate, carbon disulfide
79	benzene
81	monoterpenes
87	pentanal
89	pentanol
93	toluene
99	cyclohexanone, 2,4-dimethyl-2-pentene
101	hexenal
105	styrene
107	C_8 aromatics
121	C_9 aromatics
135	C_{10} aromatics
137	monoterpenes

[a]Many of these channels were selected to explore the possibility of monitoring the indicated compounds. However, after the ICARTT campaign we concluded that several did not yield useful data.